It is a matter of measurement that but one fourth of the water in the Niagara River passes over the American Falls. The sill of the falls is ten feet higher on the American side than on the Canadian. How easily the water is driven entirely out of the American channel is seen by the ice dams of the past few years, which, gorging the stream from the upper end of Goat Island to the American side, have turned the water from that channel so that one can cross the bed of the river dry-shod. Let then, from one fourth to one third of the water be permanently abstracted from the river, and the American Falls will be permanently dry. The production of power actual and immediately contemplated by the five companies within their charters will consume 48,400/224,000 of the water, or 1/5 —. With the estimated abstraction of water by the sixth (American) company this fraction becomes 58,400/224,000 or 1/4 —. Should the proposed additional Canadian plans be effected the proportion will become 88,396/224,000 or 1/3 —. In any one of these cases the danger limit is reached and the perpetuity of the American Falls now hangs by the slender thread of improbability that these companies shall produce to their statutory limitations or find a market for their product.

It is authentically stated that 800,000 tourists visit Niagara annually, bringing an enormous revenue to the place. As soon as the world learns that New York and Canada have shorn this famous place of its beauties, this source of industrial prosperity will be gone. While these magnificent schemes of power development are putting to shame a sentiment of proper pride which should be national rather than local, unlimited horsepower lies idle in the region where these companies hope to find their market and in the development of this none of the finer manifestations of natural power and none of the finer sentiments of mankind would be assailed.

The address was a strong presentation of the subject and the press of the city joined in the protest against the destruction of the falls.

J. E. KIRKWOOD,
Corresponding Secretary.

DISCUSSION AND CORRESPONDENCE.

CONSULTING EXPERTS IN LIBRARIES.

TO THE EDITOR OF SCIENCE: Dr. Francis B. Sumner's letter, published in SCIENCE, January 13, seems to offer an appropriate opportunity for calling attention to certain noteworthy developments at the Library of Congress during the administration of Dr. Herbert Putnam. Dr. Sumner urges the desirability of employing, in connection with one of our great libraries, 'a staff of consulting experts, men of the rank of college professors, whose duty it should be to furnish definite bits of information in response to legitimate questions, or, at least, to guide the seeker on his way * * * the establishment of a sort of human encyclopedia as an adjunct to the library.'

While this ideal has not yet been attained at the Library of Congress, a remarkable development in this direction has taken place during the last few years. It is the function of the Division of Bibliography, established in 1900, not only to prepare and publish lists of references on special topics, principally those of current political interest, but also to supply bibliographical information in reply to inquiries received by mail. The reference work of this character has been mainly in the fields of social and political science and history.

As, however, the collection of scientific literature has recently been reclassified and is now in process of being recatalogued, it has become possible to undertake similar work in science. There are on the staff of the library at the present time several specialists representing different sciences, and it is always possible to consult others associated with various branches of the government service. Furthermore, it being part of the policy of the Librarian of Congress to make the collection of bibliographies, indexes, library catalogues, etc., as complete as possible, unusual resources in the way of bibliographical tools are available at the library. A Science Section of the library, in charge of the undersigned, has accordingly been organized recently and one of its functions is to carry on the reference work in this field, both for investigators at the scientific bureaus in Wash-

ington and in answer to legitimate inquiries by mail.

Under these circumstances it seems that the facilities now offered by the Library of Congress meet the need indicated in Dr. Sumner's letter to a very considerable extent, and further advances in this direction will occur if it appears that valuable service can be rendered.

I conclude by inviting the readers of SCIENCE to make use of these new facilities whenever the library resources to which they have access are inadequate to the needs of the investigations which they have in hand. Communications should be addressed to the Librarian of Congress, and should be marked 'Science Section' if they are inquiries referring to the mathematical, physical or natural sciences.

J. DAVID THOMPSON.

THE STORAGE OF MICROSCOPIC SLIDES.

TO THE EDITOR OF SCIENCE: In your issue of December 30 you published an article by C. L. Marlatt, of the U. S. Department of Agriculture, describing a method of storing and indexing microscopic slides.

The Bausch and Lomb Optical Company have designed and are selling an excellent cabinet with card system which has all the advantages claimed by Mr. Marlatt for his and lacking only the envelopes, which I can not but think must be somewhat inconvenient.

These cabinets are made in three sizes, holding 500, 1,500 and 3,000 slides respectively. Tiers of trays, each running in its own groove, are constructed to take slides of various sizes. At the bottom are drawers (one, two or three) containing separate cards for every slide, on each of which is printed a form for registering the slide: Tray No.—Series No.—Name of Slide—Stain—Mounted in— and two lines for other data. There are also printed guide cards from A to Z.

The objects being recorded on separate cards, the removal of slides necessitates simply the removal of its corresponding card, while the addition of slides requires only the filling out and insertion of new cards. Classification thus, it will be seen, becomes exceedingly simple. The slides may be rearranged and the collection increased or diminished with the least possible amount of trouble.

JOSEPHINE SHATZ.

ROCHESTER, N. Y.,
January 8, 1905.

SPECIAL ARTICLES.

DOPPLER'S PRINCIPLE AND LIGHT-BEATS.

THERE is a beautiful lecture experiment in illustration of Doppler's principle due, I believe, to Koenig. A vibrating tuning fork of high pitch, say 2,000 vibrations per second, is moved to and fro near, and at right angles to, a reflecting wall. The waves coming from the fork and (virtually) from its image back of the wall are changed in length by the opposite motions of fork and image with the result that very audible beats are heard. With a fork of the pitch mentioned, a speed of three feet per second gives beats at the rate of about eleven per second. Although special forks are made for this experiment, they are quite unnecessary. An ordinary C 512 fork of Koenig's pattern gives a very shrill tone when strongly bowed near the shank and answers the purpose admirably. If the fork is held stationary and the reflecting surface is moved, the effect is the same on account of the motion of the fork's image.

Attempts to secure visible beats by means of light waves of slightly different wave-length have met with no success, partly on account of rapid changes of phase, and partly because of the difficulty of securing two sources whose vibration frequencies are nearly enough equal. Thus if we assume (what is most likely not true) that the failure to observe interference fringes with differences of path greater than, say, 30 cm. indicates a change of phase, this would indicate 10^9 or more changes of phase per second. On the other hand, should we take the two D lines as sources there would be about 10^{12} beats per second. It is evidently almost hopeless to attempt to secure visible light-beats in this manner. If we consider Doppler's effect, however, the case is quite otherwise. The second form of Koenig's experiment, viz., that in which the reflector is moved, is in principle almost exactly analogous to Professor Michelson's interferometer.